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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/004,581	12/04/2001	Stuart T. Linsky	22-0147	5145
30050	7590	04/01/2005	EXAMINER	
PATENT COUNSEL, TRW INC. S & E LAW DEPT. ONE SPACE PARK, BLDG. E2/6051 REDONDO BEACH, CA 90278			TORRES, JUAN A	
			ART UNIT	PAPER NUMBER
			2631	

DATE MAILED: 04/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/004,581	LINSKY ET AL.	
	Examiner	Art Unit	
	Juan A. Torres	2631	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 04 December 2001.
 2a) This action is FINAL. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-30 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) Claim(s) _____ is/are allowed.
 6) Claim(s) 1-30 is/are rejected.
 7) Claim(s) 1-10, 15-18, 24, 26 and 28-30 is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on 04 December 2001 is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. _____ .
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ .	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
	6) <input type="checkbox"/> Other: _____ .

DETAILED ACTION

Drawings

INFORMATION ON HOW TO EFFECT DRAWING CHANGES

Replacement Drawing Sheets

Drawing changes must be made by presenting replacement sheets which incorporate the desired changes and which comply with 37 CFR 1.84. An explanation of the changes made must be presented either in the drawing amendments section, or remarks, section of the amendment paper. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). A replacement sheet must include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of the amended drawing(s) must not be labeled as "amended." If the changes to the drawing figure(s) are not accepted by the examiner, applicant will be notified of any required corrective action in the next Office action. No further drawing submission will be required, unless applicant is notified.

Identifying indicia, if provided, should include the title of the invention, inventor's name, and application number, or docket number (if any) if an application number has not been assigned to the application. If this information is provided, it must be placed on the front of each sheet and centered within the top margin.

Annotated Drawing Sheets

A marked-up copy of any amended drawing figure, including annotations indicating the changes made, may be submitted or required by the examiner. The annotated drawing sheet(s) must be clearly labeled as "Annotated Sheet" and must be presented in the amendment or remarks section that explains the change(s) to the drawings.

Timing of Corrections

Applicant is required to submit acceptable corrected drawings within the time period set in the Office action. See 37 CFR 1.85(a). Failure to take corrective action within the set period will result in ABANDONMENT of the application.

If corrected drawings are required in a Notice of Allowability (PTOL-37), the new drawings MUST be filed within the THREE MONTH shortened statutory period set for reply in the "Notice of Allowability." Extensions of time may NOT be obtained under the provisions of 37 CFR 1.136 for filing the corrected drawings after the mailing of a Notice of Allowability.

The informal drawings are not of sufficient quality to permit examination. Accordingly, replacement drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to this Office action. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action.

Applicant is given a TWO MONTH time period to submit new drawings in compliance with 37 CFR 1.81. Extensions of time may be obtained under the provisions of 37 CFR 1.136(a). Failure to timely submit replacement drawing sheets will result in ABANDONMENT of the application.

New corrected drawings in compliance with 37 CFR 1.121(d) are required in this application because the disclosure mention figures 9-12 and in the specification they are only 8 figures. Applicant is advised to employ the services of a competent patent draftsperson outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the

a) A decision directed phase locked loop circuit, comprising: a phase detector which receives an input sequence of baseband complex samples in a data

communication system and a plurality of different phase estimates and generates phase differences between said baseband complex samples and said plurality of different phase estimates; an inner block decoder which decodes said baseband complex samples multiple times with said phase estimates to generate multiple decoded data; a phase error generation circuit which receives said baseband complex samples and said decoded data from said inner block decoder and which generates multiple feedback phase error terms based on said baseband complex samples and said multiple decoded data values; an outer block decoder which receives the multiple codewords generated by said inner block decoder based on a selection of said selection circuit; a loop filter which filters said phase error terms; and a phase accumulator that updates the current phase estimate on each iteration of the phase locked loop.

b) A decoder for use in a data communication system, comprising: a phase locked loop which estimates the phase of an input modulated signal encoded by a sequence of codewords from a rectangular form into a pair of polar coordinates having an incoming phase, said phase locked loop comprising: a comparator which generates a phase difference of said incoming phase of said input modulated signal and an estimated phase; a converter which converts said polar coordinates having said phase difference into a set of vector pairs of phase stabilized observables in said rectangular form; a first block decoder which decodes said set of vector pairs of phase stabilized observables in said rectangular form at a decode rate to generate a set of associated codewords and a phase error estimate; and a loop filter which filters said phase error estimate from said block decoder to yield an update of said estimated phase at each

codeword; and a second block decoder which selects codewords from said set of associated codewords generated by said first block decoder and corrects errors in the selected codewords.

c) A communication receiver using a decoder decoding an input modulated signal from a transmission channel which is encoded by a sequence of codewords, comprising: a down converter which generates a succession of baseband signal samples of said input modulated signal including an in-phase component and a quadrature-phase component; a first converter which converts said succession of baseband signal samples of said input modulated signal from a rectangular form into a pair of polar coordinates having an incoming phase; a phase locked loop which estimates the phase of said input modulated signal, said phase locked loop comprising: a comparator which generates a phase difference of said incoming phase of said input modulated signal and an estimated phase; a second converter which converts said polar coordinates having said phase difference into a set of vector pairs of phase stabilized observables in said rectangular form; a first block decoder which decodes said set of vector pairs of phase stabilized observables in said rectangular form at a decode rate to generate a set of associated codewords and a phase error estimate; and a loop filter which filters said phase error estimate from said block decoder to yield an update of said estimated phase at each codeword; and a second block decoder which selects codewords from said set of associated codewords generated by said first block decoder and corrects errors in the selected codewords.

d) A communication receiver for receiving an input modulated signal encoded by a sequence of codewords, comprising: a converter which converts the input modulated signal encoded by said sequence of codewords into a series of phase stabilized observables in rectangular form for each codeword; a phase locked loop comprising a first block decoder which decodes said phase stabilized observables at a decode rate to generate a set of associated codewords and an estimate of a phase error of the input modulated signal by derotation of the series of phase stabilized observables based on said decoded data and updates said phase error at each codeword; and a second block decoder which selects codewords from the first block decoder and corrects the selected codewords if they are in error.

must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an

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application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

The drawings are objected to under 37 CFR 1.83(a) because they fail to show figures 9-12 as described in the specification. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

The drawings are objected to under 37 CFR 1.83(b) because they are incomplete. 37 CFR 1.83(b) reads as follows:

When the invention consists of an improvement on an old machine the drawing must when possible exhibit, in one or more views, the improved portion itself, disconnected from the old structure, and also in another view, so much only of the old structure as will suffice to show the connection of the invention therewith.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

The drawings are objected to because figure 6 the output of block 604 is denoted as $\hat{\theta}[i]$ and in the disclosure in page 22 paragraph [0045] and [0046] it is described as $\hat{\phi}[i]$. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in

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reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Figure 2 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description (abstract): 720. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

The Examiner acting in good faith has reviewed figures 9-12 from application 10/005063, and provide the following comments with reference to these figures:

Figure 9:

- a) Seems that label "710" is improper and should be "910" as indicated in the disclosure.
- b) Seems that label "720" is improper and should be "920" as indicated in the disclosure.

Figure 10:

- a) Seems that label "801-1" is improper and should be "1001-1" as indicated in the disclosure.

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b) Seems that label "801-2" is improper and should be "1001-2" as indicated in the disclosure.

c) Seems that label "801-3" is improper and should be "1001-3" as indicated in the disclosure.

d) Seems that label "801-n" is improper and should be "1001-n" as indicated in the disclosure.

e) Seems that label "820" is improper and should be "1020" as indicated in the disclosure.

Figure 11:

a) Seems that label "910" is improper and should be "1110" as indicated in the disclosure.

b) Seems that label "920" is improper and should be "1120" as indicated in the disclosure.

c) Seems that label "930" is improper and should be "1130" as indicated in the disclosure.

Figure 12:

a) Seems that label "1001-1" is improper and should be "1201-1" as indicated in the disclosure.

b) Seems that label "1001-2" is improper and should be "1201-2" as indicated in the disclosure.

c) Seems that label "1001-3" is improper and should be "1201-3" as indicated in the disclosure.

d) Seems that label "1001-n" is improper and should be "1201-n" as indicated in the disclosure.

e) Seems that label "1020" is improper and should be "1220" as indicated in the disclosure.

f) Seems that label "1010-1" is improper and should be "1210-1" as indicated in the disclosure.

g) Seems that label "1010-2" is improper and should be "1210-2" as indicated in the disclosure.

h) Seems that label "1010-3" is improper and should be "1210-3" as indicated in the disclosure.

i) Seems that label "1010-n" is improper and should be "1210-n" as indicated in the disclosure.

Specification

The abstract of the disclosure is objected to because makes reference to a selection circuit 720 that is not shown in the drawings. Correction is required. See MPEP § 608.01(b).

The disclosure is objected to because of the following informalities:

a) In page 27 paragraph [0055] makes reference to Figs. 9-11 that are not included in the specification.

b) In page 28 paragraph [0057] makes reference to Figs. 10 and 12 that are not included in the specification.

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c) In page 28 paragraph [0058] makes reference to Figs. 10 that is not included in the specification.

d) In page 29 paragraph [0058] the recitation "PLLs 1001-1 to 801-n" is improper; it is suggested to be changed to 1001-1 to 1001-n".

The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

35 U.S.C. 112, first paragraph, requires the specification to be written in "full, clear, concise, and exact terms." The specification is replete with terms which are not clear, concise and exact. The specification should be revised carefully in order to comply with 35 U.S.C. 112, first paragraph. Examples of some unclear, inexact or verbose terms used in the specification are: references to figures not filled with the specification.

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: "Decision Directed Phase Locked Loop (DD-PLL) with inner and outer decoder"

The use of the trademark TRW Inc. has been noted in this application. It should be capitalized wherever it appears and be accompanied by the generic terminology.

Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks.

Trademarks are suggested to be removed because they change or disappear in time.

Appropriate correction is required.

Claim Objections

Claims 1-9 are objected to because of the following informalities:

- a) in lines 4, 6, 8 and 10 of claim 1 the recitation "said baseband complex samples" is improper; it is suggested to be changed to "said sequence of baseband complex samples".
- b) In line 12 of claim 1 the recitation "received the multiple codewords" is vague and indefinite; it is suggested to be changed to "received a multiple codewords".
- c) In line 13 of claim 1 the recitation "based on the selection of said selection circuit" is vague and indefinite; it is suggested to be changed to "based on a selection of a selection circuit".
- d) In line 15 of claim 1 the recitation "the current phase estimate" is vague and indefinite; it is suggested to be changed to "a current phase estimate".

Claim 2 is objected to because of the following informalities: the recitation "the baseband complex samples" in lines 4, 6, 8 and 10 is improper; it is suggested to be changed to "the sequence of baseband complex samples".

Claim 3 is objected to because of the following informalities: the recitation "said codewords" in lines 1-2 is improper; it is suggested to be changed to "said sequence of codewords".

Claim 4 is objected to because of the following informalities:

- a) In line 1 the recitation "said codewords" is improper; it is suggested to be changed to "said sequence of codewords".
- b) In line 2 the recitation "the decoded rate" is improper; it is suggested to be changed to "a decoded rate".

Claim 6 is objected to because of the following informalities: the recitation "the composite decoded codeword" in lines 2-3 is improper; it is suggested to be changed to "a composite decoded codeword".

Claim 7 is objected to because of the following informalities: the recitation "the current phase estimate" in line 2 of claim 7 is improper; it is suggested to be changed to "a current phase estimate".

Claim 8 is objected to because of the following informalities: the recitation "the current phase estimate" in line 2 of claim 8 is improper; it is suggested to be changed to "the phase estimate".

Claim 10 is objected to because of the following informalities: the recitation "the selected codewords" in line 16 of claim 10 is improper; it is suggested to be changed to "a selected codewords".

Claim 15 is objected to because of the following informalities: the recitation "the composite decoded codeword" in lines 2-3 of claim 15 is improper; it is suggested to be changed to "a composite decoded codeword".

Claim 16 is objected to because of the following informalities: the recitation "said codewords" in lines 1-2 of claim 16 is improper; it is suggested to be changed to "said sequence of codewords".

Claim 17 is objected to because of the following informalities: the recitation "said preselected codewords" in line 1 of claim 17 is improper; it is suggested to be changed to "a preselected codewords".

Claim 18 is objected to because of the following informalities: the recitation "the selected codewords" in line 23 of claim 18 is improper; it is suggested to be changed to "a selected codewords".

Claim 24 is objected to because of the following informalities: the recitation "the composite decoded codeword" in lines 2-3 of claim 24 is improper; it is suggested to be changed to "a composite decoded codeword".

Claim 26 is objected to because of the following informalities: the recitation "said preselected codewords" in lines 1-2 of claim 26 is improper; it is suggested to be changed to "a composite decoded codeword".

Claim 28 is objected to because of the following informalities: the recitation "said sequence of complex sample pairs" in line 6 of claim 28 is improper; it is suggested to be changed to "a sequence of complex sample pairs".

Claim 29 is objected to because of the following informalities: the recitation "said decoded data" in line 9 of claim 29 is improper; it is suggested to be changed to "a decoded data".

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 10-17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In line 7 of claim 10 the recitation "a second converter" is vague and indefinite. There is insufficient antecedent basis for this limitation in the claim, it is not clear what is the first converter.

In line 13 of claim 10 the recitation "from said block decoder" is vague and indefinite. There is insufficient antecedent basis for this limitation in the claim. The claim recited a first and a second block decoder.

Claim 14 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In line 1 of claim 14 the recitation "said block decoder" is vague and indefinite. There is insufficient antecedent basis for this limitation in the claim, it is not clear if it is the first or the second block decoder.

Claim 16 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In line 2 of claim 16 the recitation "the codewords" is vague and indefinite. There is insufficient antecedent basis for this limitation in the claim. It is not clear what codewords the claim is referring to the "sequence of codewords" or the "the composite decoded codewords".

Claims 18-28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In line 20 of claim 18 the recitation "from said block decoder" is vague and indefinite. There is insufficient antecedent basis for this limitation in the claim. The claim recited a first and a second block decoder.

Claim 23 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In lines 1-2 of claim 23 the recitation "said block decoder" is vague and indefinite. There is insufficient antecedent basis for this limitation in the claim, it is not clear if it is the first or the second block decoder.

Claim 25 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In line 2 of claim 25 the recitation "the codewords" is vague and indefinite. There is insufficient antecedent basis for this limitation in the claim. It is not clear what codewords the claim is referring to the "sequence of codewords" or the "the composite decoded codewords".

Claims 29-30 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In line 5 and line 10 of claim 29 the recitation "codeword" is vague and indefinite. There is insufficient antecedent basis for this limitation in the claim. It is not clear if it means "said sequence of codewords" or "said selected codewords" or "said associated codewods".

Claim 30 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In line 3 and 4 of claim 30 the recitation "said codewords" is vague and indefinite. There is insufficient antecedent basis for this limitation in the claim. It is not clear if it means "said sequence of codewords" or "said selected codewords" or "said associated codewods".

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent

and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-9 rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-9 of U.S. Patent No. 6781447 respectively. Although the conflicting claims are not identical, they are not patentably distinct from each other because present claims 1-9 are broader in scope than claims 1-9 of U.S. Patent No. 6781447. All the limitations in claims 1-9 of U.S. Patent No. 6781447 can read on claims 1-9 of this instant application.

Claims 10, 11, 12, 13, 14 and 15 rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 17, 19, 20, 21, 22 and 23 of U.S. Patent No. 6781447. Although the conflicting claims are not identical, they are not patentably distinct from each other because present claims 10, 11, 12, 13,

14 and 15 are broader in scope than claims 17, 19, 20, 21, 22 and 23 of U.S. Patent No. 6781447. All the limitations in claims 17, 19, 20, 21, 22 and 23 of U.S. Patent No. 6781447 can read on claims 10, 11, 12, 13, 14 and 15 of this instant application.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kucar (US 5115454) discloses a method to improve carrier synchronization and data detection for digital data, suppressed carrier transmission systems. Rhind (US 4985900) discloses a non-intrusive channel-impairment analyzer. Kaser (US 4091331) discloses that in a receiver for PSK modulated signals a carrier phase tracking is achieved by a feedback loop comprising a phase error predictor, providing means for adaptively setting the gain factor in the phase error predictor to an optimum value, in response to successive residual phase errors. Tretter (US 4054838) discloses a QAM phase jitter and frequency offset correction system.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Juan A. Torres whose telephone number is (571) 272-3119. The examiner can normally be reached on Monday-Friday 9:00 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad H. Ghayour can be reached on (571) 272-3021. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JAT
3-2-2005



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